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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHAKRABARTI, ARUN K	
ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/812,541	Lubenow et al.
Examiner	**Art Unit**
Arun Chakrabarti	1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Feb 10, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *2, 3, 8, 13, 14, 17-30, 34, 39, 44, 45, and 48-70* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *2, 3, 8, 13, 14, 17-30, 34, 39, 44, 45, and 48-70* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Detailed Action*

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 10, 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 are rejected under 35 U.S.C. 103(a) as being obvious over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994).

Dobeli et al. teaches a method for isolating a fusion protein from a sample in a vessel (Abstract and Column 9, lines 8-19), comprising the steps of :

a) combining the sample containing the fusion protein with metal-chelate affinity particles suitable for binding the protein, the affinity particles being insoluble in the sample (Column 9, lines 8-19);

b) collecting the metal-chelate affinity particles (Column 9, lines 8-19);

c) separating the remainder of the sample from the immobilized magnetic affinity particles (Column 9, lines 8-19, and Example 22);

d) optionally, resuspending the affinity particles in a solution (Example 3, column 8, lines 20-23);

e) optionally, eluting the fusion protein from the affinity particles, followed by separating the affinity particles from the eluted fusion protein (Column 9, lines 8-19);

wherein any of the steps b), c) ,d), e) if present, and f) if present may optionally be also performed in the presence of the detergent, wherein the use of detergent is sufficient to reduce loss of particles during any separation step (Column 9, lines 8-19). Dobeli clearly teaches, "The addition of detergent permits problem-free operations even with fusion proteins which are poorly soluble in aqueous solution (Column 9, lines 16-19)".

Dobeli et al. teaches a method wherein the combining step (a) is carried out in the absence of detergent, but detergent is added prior to the separation step (b) (Example 22).

Dobeli et al. teaches a method wherein the particles are selected from superparamagnetic beads (NTA - Ni resins in this case, Column 9, lines 1-13).

Dobeli et al. teaches a method wherein the particles are composed of materials selected from metal oxides present inherently in the magnetic silica beads (Column 9, lines 1-13).

Dobeli et al. teaches a method wherein the molecule is a protein fused to metal chelating group containing six consecutive histidine residues (Example 22).

Dobeli et al. does not specify the concentration of anionic detergent in the range of .0005% to 2%.

However, it is *prima facie* obvious that selection of the specific concentration of a known detergent represents routine optimization with regard to production of desired soluble components and the original starting concentration of the sample to be purified, which routine optimization parameters are explicitly recognized to an ordinary practitioner in the relevant art. As noted *In re Aller*, 105 USPQ 233 at 235,

> More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the specific concentration selection performed was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered

unexpected in any way as compared to the closest prior art.

5. Claims 18-20, 25, 26, 50, 51, 56, and 57 are rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994) in view of Quigley et al. (U.S. Patent 4,888,367) (December 19, 1989).

Dobeli et al. teaches the method of claims 2-3, 8, 13, 14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. does not teach the use of nonionic detergent polyoxyethylene sorbitol monolaurate and anionic detergent SDS.

Quigley et al teaches the use of nonionic detergent polyoxyethylene sorbitol monolaurate and anionic detergent SDS (Column 8, line 44 to Column 10, line 13).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute the affinity purification method with suitable nonionic detergent polyoxyethylene sorbitol monolaurate and anionic detergent SDS of Quigley et al in the method of Dobeli et al. in order to separate any protein from any biological sample as Quigley states, "Representative of the nonionic surfactants useful for the purposes of the invention are those falling within following generic classes and having an HLB in the broad ranges (Column 8, lines 44-47)". An ordinary artisan would have been motivated to utilize the equivalent chaotropic agents along with the purification method with suitable nonionic detergent polyoxyethylene sorbitol monolaurate and anionic detergent SDS of Quigley et al. in the affinity purification method of Dobeli et al. in order to accomplish the considerable and satisfactory purification of

proteins and in order to achieve the express advantages of surfactants, as noted by Quigley et al., which are useful chaotropic agents having an HLB in the broad ranges.

Dobeli et al. in view of Quigley et al do not specify the concentration of anionic detergent in the range of 0.01% to 2%.

However, it is *prima facie* obvious that selection of the specific concentration of a known detergent represents routine optimization with regard to production of desired soluble components and the original starting concentration of the sample to be purified, which routine optimization parameters are explicitly recognized to an ordinary practitioner in the relevant art. As noted *In re Aller*, 105 USPQ 233 at 235,

> More particularly, where the general conditions
> of a claim are disclosed in the prior art, it is
> not inventive to discover the optimum or workable
> ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the specific concentration selection performed was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

6. Claims 21, 29, 30, 52, 60, and 61 are rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994) in view of Gallant et al (U.S. Patent 5,798,442) (August 25, 1998).

Dobeli et al. teaches the method of claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. does not teach the use of zwitterionic detergent 3-[cholamido-propyl)-dimethyl-ammonio]-1-propanesulfonate.

Gallant et al teaches the use of zwitterionic detergent 3-[cholamido-propyl)-dimethyl-ammonio]-1-propanesulfonate in affinity purification method (Column 22, lines 33 to column 23, line 27).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute the affinity purification method with suitable zwitterionic detergent of Gallant et al in the method of Dobeli et al. in order to separate any protein or nucleic acid from any biological sample. An ordinary artisan would have been motivated to utilize the equivalent chaotropic agents along with the affinity purification method of Gallant et al in the affinity purification method of Dobeli et al. in order to accomplish the considerable and satisfactory purification of proteins and nucleic acids with an useful chaotropic agents.

Dobeli et al. in view of Gallant et al do not specify the concentration of anionic detergent in the range of 0.01% to 2%.

However, it is *prima facie* obvious that selection of the specific concentration of a known detergent represents routine optimization with regard to production of desired soluble components and the original starting concentration of the sample to be purified, which routine optimization parameters are explicitly recognized to an ordinary practitioner in the relevant art. As noted *In re Aller*, 105 USPQ 233 at 235,

> More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the specific concentration selection performed was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

7. Claims 22, 27, 28, 53, 58, and 59 are rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994) in view of Stein et al (U.S. Patent 4,009,213) (February 22, 1977).

Dobeli et al. teaches the method of claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. does not teach the use of cationic detergent dodecyl trimethyl ammonium chloride.

Stein et al. teaches the use of cationic detergent dodecyl trimethyl ammonium chloride. (Example 8, column 17, lines 65-67).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute the suitable cationic detergent of Stein et al in the method of Dobeli et al. since Stein et al states, "The use of the cationic compounds is

preferred in the separation of fatty alcohols of different melting points (column 6, lines 22-24)". An ordinary artisan would have been motivated by the express statement of Stein et al. to utilize the cationic detergents of Stein et al in the method of Dobeli et al. in order to improve protein purification and in order to achieve the express advantage of a method, as noted by Stein et al, which can be preferably used for accomplishing separation of fatty alcohols of different melting points.

Dobeli et al. in view of Stein et al do not specify the concentration of cationic detergent in the range of 0.01% to 2%.

However, it is *prima facie* obvious that selection of the specific concentration of a known detergent represents routine optimization with regard to production of desired soluble components and the original starting concentration of the sample to be purified, which routine optimization parameters are explicitly recognized to an ordinary practitioner in the relevant art. As noted *In re Aller*, 105 USPQ 233 at 235,

> More particularly, where the general conditions
>
> of a claim are disclosed in the prior art, it is
>
> not inventive to discover the optimum or workable
>
> ranges by routine experimentation.

Routine optimization is not considered inventive and no evidence has been presented that the specific concentration selection performed was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

8. Claim 67 is rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933)

(February 8, 1994) in view of Tsaur et al (U.S. Patent 5,385,959) (January 31, 1995).

Dobeli et al. teach the method of claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. do not teach the method wherein the polyethylene polymer is a polyvinyl alcohol.

Tsaur et al. teach the method wherein the polyethylene polymer is a polyvinyl alcohol. (Column 11, lines 11-44 and Claims 1-3).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute the polyethylene polymer polyvinyl alcohol of Tsaur et al in the method of Dobeli et al. since Tsaur et al state, "Indeed such reactions are well known in the art and widely used in protein purification (Column 11, lines 34-35)". An ordinary artisan would have been motivated by the express statement of Stein et al. to utilize the cationic detergents of Tsaur et al in the method of Dobeli et al. in order to improve the protein purification and in order to achieve the express advantage of a method , as noted by Tsaur et al, which is well known in the art and widely used in protein purification.

9. Claim 69 is rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994) in view of Taoda et al (U.S. Patent 6,180,548 B1) (January 30, 2001).

Dobeli et al. teach the method of claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. do not teach the method wherein the metal oxide is selected from titanium

oxide.

Taoda et al. teach the method wherein the metal oxide is selected from titanium oxide (Column 4, lines 4-13 and Claims 1, 2 and 4).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine the metal oxide selected from titanium oxide of Taoda et al in the method of Dobeli et al. since Taoda et al state, "Due to the oxidization-reduction effect of electrons and holes generated in titanium oxide during irradiation with light, the protein, amino acid, bacteria, and viruses adsorbed by the apatite film can be continuously decomposed and removed promptly (Column 4, lines 10-13)". An ordinary artisan would have been motivated by the express statement of Taoda et al. to substitute and combine the metal oxide selected from titanium oxide of Taoda et al in the method of Dobeli et al. in order to improve the protein purification and in order to achieve the express advantage of a method , as noted by Taoda et al, in which the protein, amino acid, bacteria, and viruses adsorbed by the apatite film can be continuously decomposed and removed promptly.

10. Claims 64-66, and 70 are rejected under 35 U.S.C. 103 (a) over Dobeli et al. (U.S. Patent 5,284,933) (February 8, 1994) in view of Valkirs (U.S. Patent 6,348,318 B1) (February 19, 2002).

Dobeli et al. teach the method of claims 2-3, 8, 13,14, 17, 23, 24, 34, 44, 45, 48-49, 54, 55, 62-63, and 68 as described above.

Dobeli et al. teaches a method wherein the magnetic affinity particles are nickel-

nitrilotriacetic acid agarose beads (Column 9, lines 1-13).

Dobeli et al. do not teach the method of applying a magnetic field to the vessel so as to attract and immobilize the metal-chelate, magnetic affinity particles.

Valkirs teaches the method of applying a magnetic field to the vessel so as to attract and immobilize the metal-chelate, magnetic affinity particles.(Abstract, Column 11, line 54 to Column 12, line 27, and Example).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine the method of applying a magnetic field to the vessel so as to attract and immobilize the metal-chelate, magnetic affinity particles. of Valkirs in the method of Dobeli et al. since Valkirs states, "The methods, compositions and kits provided by the invention are useful for concentrating a wide variety of target analytes. Basically, any target analyte for which a ligand exists that is capable of binding to the target analyte, in a reasonably specific manner, can be concentrated using the described methods. For example, the methods are useful for concentrating haptens, hormones, peptides, proteins, drugs, and other substances of natural or synthetic origin (Column 12, lines 28-35)". An ordinary artisan would have been motivated by the express statement of Valkirs to substitute and combine the method of applying a magnetic field to the vessel so as to attract and immobilize the metal-chelate, magnetic affinity particles. of Valkirs in the method of Dobeli et al. in order to improve the protein purification and in order to achieve the express advantage of an invention , as noted by Valkirs, which provides methods, compositions and kits useful for concentrating a wide variety of target analytes including haptens, hormones, peptides, proteins, drugs, and other

substances of natural or synthetic origin.

Response to Arguments

11. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Response to Amendment

12. In response to amendment, all previous 102 and 103 rejections are hereby withdrawn. However, new 103(a) rejections have been included.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun Chakrabarti , Ph.D., whose telephone number is (703) 306-5818. The examiner can normally be reached on 7:00 AM-4:30 PM from Monday to Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703) 308-1119. The fax phone number for this Group is (703) 746-4979. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group analyst Chantae Dessau whose telephone number is (703) 605-1237.

Arun Chakrabarti,

Patent Examiner,

May 19, 2003

Arun Kr. Chakrabarti

ARUN K. CHAKRABARTI
PATENT EXAMINER